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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/591,856	09/05/2006	William Downs	CASE 7102	4249

7590 05/22/2009

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EXAMINER	
HOPKINS, ROBERT A	

ART UNIT	PAPER NUMBER
1797	

MAIL DATE	DELIVERY MODE
05/22/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/591,856	DOWNS ET AL.	
	Examiner	Art Unit	
	Robert A. Hopkins	1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6 and 8-13 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Nelson, Jr(6953494).

Nelson, Jr teaches a method of removing a portion of elemental mercury in a flue gas created during a combustion process comprising providing four streams, wherein the first stream comprises a halogen containing reagent, the second stream, comprises a sorbent, the third stream comprises conveyance air(carrier gas; column 7 lines 64-68), and the fourth stream comprises a flue gas containing elemental mercury, combining the first, second, and third streams wherein the halogen containing reagent is adsorbed onto the sorbent, injecting the combined stream(block 71 in figure 2) into the fourth stream(62), adsorbing the elemental mercury onto the sorbent,and removing the sorbent from the fourth stream. Nelson, Jr further teaches wherein the flue gas is created during the combustion of at least one of a fossil fuel and municipal solid waste(combustion boiler 11). Nelson, Jr further teaches wherein the fossil fuel comprises coal. Nelson, Jr further teaches wherein the halogen containing agent

comprises at least one of chlorine, bromine, iodine, fluorine , and halide derivatives thereof. Nelson, Jr further teaches wherein the sorbent comprises a carbonaceous sorbent, including powdered activated carbon. Nelson Jr, further teaches wherein the first, second, and third streams are first combined just prior to injection of the combined stream into the fourth stream. Nelson, Jr further teaches wherein the combined stream is injected into the fourth stream at a location where the temperature of the fourth stream is below about 175 degrees C. Nelson, Jr further teaches adsorbing a substantial portion of oxidized mercury present in the flue gas in addition to the elemental mercury in the fourth stream. Nelson, Jr further teaches using a fabric filter(31) to remove the sorbent from the fourth stream. Nelson, Jr further teaches using an electrostatic precipitator to remove the sorbent from the fourth stream. Nelson, Jr further teaches wherein the fourth stream is provided with up to about 4 moles of halogen per million moles of flue gas, and at least about 0.1 pounds of sorbent per million cubic feet of flue gas.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nelson, Jr(6953494) taken together with Tsutsumi et al(6514907).

Nelson, Jr teaches all of the limitations of claim 7 but is silent as to wherein the first and second streams are combined at a temperature between about 0 degrees C and about 50 degrees C. Tsutsumi et al teaches a process of combining bromine gas with activated carbon for an adsorption process, wherein the bromine gas and activated carbon are combined at a temperature between about 0 degrees C and about 50 degrees C(column 4 lines 59-62). It would have been obvious to someone of ordinary skill in the art at the time of the invention to provide a step of wherein the first and second streams are combined at a temperature between about 0 degrees C and about 50 degrees C so that the first and second streams of Nelson, Jr are combined at a temperature which does not require a large amount of energy for impregnation of the bromine gas onto the activated carbon.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert A. Hopkins whose telephone number is 571-272-1159. The examiner can normally be reached on Monday-Thursday, 7:30am-5pm, every Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Rah
May 21, 2009

/Robert A Hopkins/
Primary Examiner, Art Unit 1797